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## MINOR STUDIES FROM THE PSYCHOLOGICAL LABORATORY OF VASSAR COLLEGE

### XXI. THE EFFECT OF VERBAL SUGGESTION ON JUDGMENTS OF THE AFFECTIVE VALUE OF COLORS

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The method followed in this study may be briefly described as follows. Pieces 2.9 cm. square were cut from all of the ninety Bradley colored papers. The observer was shown these colored squares one at a time on a white background, and was asked to judge the pleasantness or unpleasantness of the color, using the numbers from 1 to 7 in the usual way. The order of the colors was determined by chance at the outset, but was adhered to thereafter during the research, so that the conditions of affective contrast should be uniform. The colors from the thirty-sixth to the fifty-fourth in the series, that is, the middle eighteen of the series, were presented with an accompanying verbal suggestion as to their affective value. The entire experiment was performed twice with the same subject, at sittings separated by an interval of several days. In the first sitting, for half of the observers, the verbal suggestions accompanying the middle eighteen colors of the series were suggestions of unpleasantness, and in the second sitting the suggestions were of pleasantness. For the other half of the group of observers this procedure was reversed, the pleasant suggestions being given at the first sitting and the unpleasant ones at the second sitting. The suggestions took the form of favorable or unfavorable adjectives pronounced by the experimenter as the color was shown. For example, when a given color was shown in the series with unpleasant suggestion it would be accompanied by the adjective 'faded'; when the same color was shown in the series with pleasant suggestion, its accompanying adjective would be 'delicate'; another color would be termed 'warm' in the series with pleasant suggestion, and 'crude' in that with unpleasant suggestion. When an observer had completed both parts of the experiment, the following values were calculated: the average affective values of the colors in the first series exclusive of the middle eighteen, that is, the colors with no accompanying suggestion in the first series; the average affective value of the colors with no accompanying suggestion in the second series; the average affective value of the colors under the influence of the unpleasant suggestions, and the average affective value of the colors under the influence of the pleasant suggestions. The usefulness of finding the average affective value of the colors unaccompanied by suggestion, in both series, lay of course in the fact that these numbers served to indicate whether the difference in the values of the colors with opposite suggestion in the two series was the effect of the suggestions, or the expression of a general tendency to lower or raise the values in the second trial. For instance, suppose that the average value assigned to the colors under

unpleasant suggestion was .5 lower than their average value under pleasant suggestion, the series with pleasant suggestions having been given first. If now the average value of the colors unaccompanied by suggestion was in the second series higher than in the first series, then it would seem probable that the lowering under unpleasant suggestion was really due to the suggestions, and not to some influence affecting suggested and unsuggested judgments alike. It is possible to obtain a numerical representation of the strength with which the suggestion acted in a positive or negative direction (obviously in some cases the effect of this direct verbal suggestion would be negative, influencing the observer toward the opposite affective accompaniment). Such numerical values may be calculated by finding the difference between the average affective values of the 'unsuggested' colors in the two series, the difference between the average values of the colors under the opposite suggestions, and subtracting these differences from each other, paying regard to signs. Thus for example: for one observer the series with unfavorable suggestions is the one given first. The average value of the 'unsuggested' colors in the first series is for this observer .38 lower than the corresponding value in the second series. The average value of the 'suggested' colors in the first series, that is, the colors under unfavorable suggestion, is 1.5 lower than the value of the colors under favorable suggestion in the second series. We may estimate the effect of the suggestion by subtracting .38, the amount of difference due to causes other than suggestion, from 1.5; it would thus be numerically represented by 1.12. In the case of another observer, to whom also the series with unfavorable suggestion was the first one presented, the value of the 'unsuggested' colors was .15 lower in the first series, and the value of the colors under unpleasant suggestion was .44 higher than that of those under pleasant suggestion. We must conclude the influence of suggestion to have been negative in this instance, with a force represented by the sum of .15 and .44; the unfavorable suggestions, so far from lowering the values of the colors they accompanied, overcame a slight tendency to lower values in the series where they occurred, and produced a total raising of .59. Of course it must be admitted that these numerical values are anything but exact measures of the suggestibility of the observers under the given conditions. On the one hand, the average tendency to raise or lower the values of the 'unsuggested' colors in one series as compared with another might not have manifested itself in the judgments made on the eighteen colors, in the middle of the series, had these been unaccompanied by suggestion. And on the other hand, other influences beside suggestion may have helped to produce the difference between the values of the colors under unfavorable and those under favorable suggestion. In comparing the results from individuals, therefore, small differences cannot be taken as having any significance.

We had thirty-five observers, all young women students. Twenty-five of these gave results indicating a positive effect of suggestion in altering the judgments of affective value. In eight cases the amount of alteration was more than 1, an amount which could hardly be due to any influence but that of suggestion. In six other cases the alteration was .50 or more. In eleven cases it was less than .50, and in six of these was negligible in amount. Ten observers gave results indicating a negative influence of suggestion, tending to alter the judgments in the direction opposite to the suggestion. In only one of

these ten cases, however, did the amount of alteration exceed 1; in two other cases it was .50 or more, and in five cases it was negligible in amount. The averages of the numerical values described above were .64 for positive suggestion and only .38 for negative suggestion. We may conclude, therefore, that direct verbal suggestion regarding the pleasantness or unpleasantness of a color has a fairly decided positive effect on the judgments of observers of the type and under the conditions found in our investigation.

*A Note on the Comparative Pleasantness of Colors and Articulate Sounds.* The average affective value assigned by all the observers in the above study to all the colors was 4.18. The average affective value of the nonsense syllables as estimated by the observers in the preceding study was 3.6. Colors, therefore, taking the agreeable and disagreeable together, are distinctly pleasanter than articulate sounds.